REMARKS

Claims 1-29 are pending prior to entering this amendment.

The examiner objects to claim 17 for an informality.

The examiner rejects claims 1-29 under 35 U.S.C. §102(b) as being anticipated by Hembree et al (U.S. Pat. No. 6,218,848).

The applicants amend claim 17.

Claims 1-29 remain in the application after entering this amendment.

The applicants add no new matter and request reconsideration.

Claim Objections

The applicants amend claim 17 to correct a typographical error.

Claim Rejections - 35 U.S.C. §102

The examiner rejects claims 1-29 as old over Hembree.

The applicants disagree for the reasons that follow.

Hembree describes a semiconductor probe card having a resistance measuring circuitry and method of fabrication. In Hembree, its "probe card is adapted for use with a wafer probe handler, and a tester containing test circuitry..... Some of the probe contacts are arranged in a four point Kelvin structure, adapted to measure a contact resistance between the probe contacts, and mating contacts on the wafer." Hembree, abstract. "The resistivity measuring circuit evaluates a total resistance Rx of the electrical path between the resistivity contacts. A high value for Rx can indicate a high contact resistance between the probe contacts and the wafer contacts, such as would occur with misaligned or damaged contacts. A high value for Rx can also indicate high resistivity in the probe contacts or wafer contacts, such as would occur with thick metal oxides, or contaminants." Hembree, thus, discloses a measuring circuit to measure a total resistance between the resistivity contacts (and not a per channel resistivity as recited) that is then used to notify an operator that "the contacts 22 require cleaning" (column 8, line 65) or that contacts 22 are "misaligned." If the contacts 22 are misaligned, the tester 26 adjusts the "test signals to the probe card 22...to compensate for the high contact resistance." Hembree, column 8, lines 58-60.

Claim 1 recites *computing a per channel standard deviation responsive to measuring the contact resistance*. Independent claims 11, 16, and 24 include a similar limitation. The examiner alleges Hembree's tester 26 computes the recited per channel standard deviation responsive to measuring the contact resistance via its resistivity measuring circuit 38. The

applicants agree the tester 26 is "configured to apply test signals through the probe card 20 to the wafer 10 and to analyze the resultant signals." Hembree, column 4, lines 29-32. In Hembree, the tester 26 includes a resistivity measuring circuit 38 that measures "an unknown resistance Rx (FIG. 6B) between the resistivity contacts 22-1, 22-2 ... by applying a test current from source terminals (source Hi, source Lo) through a known resistance RL to the resistivity contacts 22-1, 22-2. .... This enables Rx to be quantified and evaluated. One method for evaluating the resistance Rx is by making resistance measurements when the probe card 20 is new, or immediately following cleaning. These initial values for Rx can then be compared to measured values for Rx during test procedures using the probe card 20." Hembree, column 8, lines 18-33.

But nowhere does Hembree disclose that its tester 26 or circuit 38 compute a per channel standard deviation much less computing a per channel standard deviation responsive to measuring the contact resistance as recited. Hembree never once mentions making a standard deviation computation.

Claim 1 recites *comparing the standard deviation on the at least one channel to a threshold* and *increasing the overdrive responsive to comparing the standard deviation.* Independent claims 11, 16, and 24 include a similar limitation. Since Hembree does not compute a standard deviation, it cannot disclose comparing the standard deviation as recited in claim 1. Even if Hembree did disclose computing a standard deviation, claim 1 recites comparing the standard deviation to a threshold and then increasing the overdrive responsive to the comparing. Nowhere does Hembree disclose that its resistivity measurements are used to overdrive the chuck, much less increase the overdrive responsive to the comparing as recited. In Hembree, the "measured contact resistance can be used to provide feedback to the tester 26 for generating test signals. For example, with high contact resistance the test signals to the probe card contacts 22 can be adjusted to compensate for the high contact resistance. The adjusted test signals can then be analyzed by the tester 26. Also, if the measured contact resistance is too high an operator of the probe test system 16 can be notified. If the contact resistance is within an acceptable range, the test signals can be analyzed without adjustment. The measured contact resistance can also be an indication that the probe card contacts 22 require cleaning, or that the probe card contacts 22 and the wafer contacts 14 are misaligned." Hembree, column 8, lines 55-67. Hembree's "resistance Rx can be used to provide feedback for adjusting test signal voltages and currents. The resistance Rx can also be used to indicate that the probe card (or the wafer) requires cleaning." Hembree, column 3, lines 5-9. In short, Hembree does not disclose *comparing the standard deviation on the at least one channel to a*

threshold and *increasing the overdrive responsive to comparing the standard deviation* as recited in independent claims 1, 11, 16, and 24.

Conclusion

For the foregoing reasons, the Applicants request reconsideration and allowance of all claims as amended. The Applicants encourage the Examiner to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Customer No. 20575

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.

Graciela G. Cowger
Registration No. 42,444

MARGER JOHNSON & McCOLLOM, P.C.
210 SW Morrison Street, Suite 400
Portland, OR 97204
(503) 222-3613

I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office via facsimile number (571) 273-8300, on December 20, 2005.

Beth A. Nichols